2018 IEEE 5th International Conference on Smart Instrumentation, Measurement and Application, ICSIMA 2018
11 April 2019, Article number 8688799
5th IEEE International Conference on Smart Instrumentation, Measurement and Application, ICSIMA 2018; Songkla; Thailand; 28 November 2018 through 30 November 2018; Category numberCFP18YAG-ART; Code 147490

Performance Evaluation for SE 113 Flow Control System Plant Using Self-Tuning Fuzzy PI Controller (Conference Paper)

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Abstract

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The aim of this project is to evaluate the dynamic process performance of SE113 Flow Control System Plant using self-tuning Fuzzy PI controller. The experimental data is used to model the process and the control analysis is done using Self-Tuning Fuzzy PI Controller. The performance evaluation is based on the percent overshoot, rise time and settling time of the process. The overall performance is compared with the conventional Proportional-Integral control method. The results had shown that self-tuning Fuzzy PI controller simplify the tediousness in tuning the controller and enhance the capability of PI controller. © 2018 IEEE.

Author keywords

Fuzzy PI controller | Matlab Simulink | Proportional-Integral control

Indexed keywords

Engineering controlled terms: Controllers | Flow control | Two term control systems | Water craft

Engineering uncontrolled terms: Control analysis | Conventional proportional integrals | Dynamic process | Fuzzy-PI controllers | MATLAB/ SIMULINK | Percent overshoot | Proportional-integral control | Settling time

Engineering main heading: Process control

ISBN: 978-153866288-5
Source Type: Conference Proceeding
Original language: English

DOI: 10.1109/ICSIMA.2018.8688799
Document Type: Conference Paper
Sponsors: Toyota Tsusho Nexty Electronics (Thailand) Co., Ltd.
Publisher: Institute of Electrical and Electronics Engineers Inc.

References (12)

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1 Marlin, T.E., Marlin, T.E.
(2000) *Process Control: Designing Processes and Control Systems for Dynamic Response*. Cited 497 times.
2nd Ed., New York: McGraw-Hill

2 Yan, Z., Liu, C., Song, X., Song, Z., Zhang, Y.
Application of fuzzy adaptive PID control in chlorine flow control system

(2013) *Proceedings - 6th International Symposium on Computational Intelligence and Design, ISCID 2013*, 2, art. no. 6804826, pp. 53-56. Cited 3 times.
doi: 10.1109/ISCID.2013.127

View at Publisher

3 Vadivazhagi, S., Jaya, N.
Fuzzy gain scheduled pi controller for a two tank conical interacting level system
(2014) *International Journal of Engineering and Technology (IJET*, 6 (6), pp. 2588-2594.

4 Manoj Manjunath, R., Janaki Raman, S.
Fuzzy adaptive pid for flow control system based on
(2011) *IJCA Special Issue on "computational Science-New Dimensions & Perspectives*, p. 8. Cited 2 times.

5 Mazlan, Z., Ibrahim, R.
Development and implementation of Adaptive Fuzzy PID Controller (AFPIDC) for flow control application

(2012) *ICIAS 2012 - 2012 4th International Conference on Intelligent and Advanced Systems: A Conference of World Engineering, Science and Technology Congress (ESTCON) - Conference Proceedings*, 1, art. no. 6306148, pp. 1-6. Cited 4 times.
ISBN: 978-145771967-7
doi: 10.1109/ICIAS.2012.6306148

View at Publisher

6 Jinz, J., Huang, H., Sun, J., Pang, Y.
Study on Fuzzy Self-Adaptive PID control system of biomass boiler drum water
(2013) *Journal of Sustainable Bioenergy Systems*, 3, pp. 93-98. Cited 11 times.

7 Ram, A.G., Lincoln, S.A.
Fuzzy adaptive PI controller for single input single output non-linear system

(2012) *ARPN Journal of Engineering and Applied Sciences*, 7 (10), pp. 1273-1280. Cited 13 times.
http://www.arpnjournals.com/jeas/research_papers/rp_2012/jeas_1012_789.pdf

8 Korsane, D.T., Yadav, V., Raut, K.H.
PID tuning rules for first order plus time delay system
(2014) *International Journal of Research in Electrical Electronics Instrumentation and Control Engineering*, 2 (1). Cited 14 times.
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